0054330

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

DEC 27 2000

01-MPD-041

Ms. Jane A. Hedges
Cleanup Section Manager
Nuclear Waste Program
State of Washington
Department of Ecology
1315 W. Fourth Avenue
Kennewick, Washington 99336

Dear Ms. Hedges:

CONTAINED-IN DETERMINATION REQUEST FOR THE RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) DRILLING WASTE LOCATED AT THE 100-N 90-DAY PAD

The U.S. Department of Energy, Richland Operations Office is requesting that the State of Washington Department of Ecology (Ecology) grant a contained-in determination for saturated zone soil and debris generated during well installations around the 200 West Tank Farms to satisfy Tri-Party Agreement Milestone M-24-00L. It is requested that the contained-in determination include the contaminated soil encountered in the vadose zone during drilling of boring C3122 and the associated waste. Waste from the drilling activities is being stored at the 100-N 90-day accumulation area. Storage space on this 90-day pad is becoming a concern and it is requested that Ecology expedite this request.

The contained-in determination request is attached and includes data from four of the groundwater wells that have been drilled and provides the methodology for evaluating data from the other wells as it is received. If you have any questions regarding this request, please contact me at (509) 373-9630.

Sincerely,

John G. Morse, Program Manager
Groundwater/Vadose Zone Project

GWVZ:MJF

Attachment:

cc: See page 2

cc w/attach:
J. G. Woolard, BHI
J. V. Borghese, CHI
J. H. Richards, CTUIR
B. L. Khaleel, Ecology
J. Price, Ecology
M. A. Wilson, Ecology
J. Yokel, Ecology
D. R. Sherwood, EPA
J. S. Hertzel, FHI
M. B. Reeves, HAB
P. Sobotta, NPT
M. L. Blazek, Oregon Energy
R. Jim, YN
Administrative Record

ATTACHMENT

CONTAINED-IN DETERMINATION REQUEST FOR RCRA DRILLING WASTE GENERATED DURING INSTALLATION OF 15 GROUNDWATER MONITORING WELLS AROUND THE S-SX AND T-TX-TY TANK FARMS

1.0 INTRODUCTION

The following information supports a contained-in determination for soils and associated debris (e.g., miscellaneous solid waste such as personal protective equipment) generated during *Resource Conservation and Recovery Act of 1976* (RCRA) drilling near the tank farms in the 200 West Area. Tank farm wastes have migrated into the groundwater underlying the tank farms. The tank farm wastes are known to contain listed waste constituents. Carbon tetrachloride from listed waste sources is also present in the groundwater in the 200 West Area. The saturated zone soil and debris generated during drilling the 200 West tank farm RCRA groundwater monitoring wells has come into contact with the contaminated groundwater.

Contaminated media (e.g., soil) and debris may be determined to no longer contain the dangerous waste code (i.e., the "listing") if the contaminated media/debris fall below specific risk-based concentrations. As a general policy, the Washington State Department of Ecology (Ecology) has established these risk-based action levels as the residential standards calculated under the *Model Toxics Control Act* (MTCA) (*Washington Administrative Code* [WAC] 173-303-340-720). Approval of this contained-in determination will eliminate the listed waste codes from the soil and debris generated during drilling of the 200 West Area tank farm RCRA groundwater monitoring wells. This will eliminate the need to manage the waste as a listed hazardous waste and potentially reduce the costs associated with waste disposal.

2.0 BACKGROUND

Fifteen groundwater monitoring wells are currently being installed around the S-SX, T-TX-TY tank farms (outside the fence) in support of *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) Milestone M-24-00L and M.

The process of installing the groundwater monitoring wells results in the generation of waste materials (e.g., drill cuttings, and miscellaneous solid waste such as personal protective equipment) that must be disposed as appropriate. Some of the waste has come into contact with contaminated groundwater associated with the Tank Farms. Carbon tetrachloride from a listed waste source is also known to be present in the groundwater in the 200 West Area. Form 3 of the Part A RCRA Permit for the single-shell tank farms identifies the following listed waste solvents:

- F001 – 1,1,1-trichloroethane
- F002 - methylene chloride
- F003 – acetone, methyl isobutyl ketone
- F004 – O-cresol, P-cresol, cresylic acid
- F005 – methyl ethyl ketone.

Approximately six to sixteen 55-gal drums of saturated zone soils are generated per well installation, which is dependent on the drilling method. Additionally, approximately one drum of debris (e.g., miscellaneous solid waste such as wipes, plastic, and personal protective equipment) that may have come into contact with contaminated media is generated at the well site (per well installation). A small amount of saturated zone soil sampling waste is also generated along with debris (e.g., miscellaneous solid waste such as plastic) associated with decontamination of the drilling equipment.

3.0 CONTAINED-IN STRATEGY

The strategy for this contained-in determination request was presented to Ecology in October 2000 (see Appendix). The strategy requested that a contained-in determination be granted if the concentration of listed organic constituents in the soils are less then levels identified in Table 1. The limits in Table 1 are based on either MTCA Method B values for soil or 100 times the maximum contaminant level (MCL) for groundwater (if this is more restrictive then the MTCA Method B value for soil).

Two sampling schemes were proposed to Ecology in October 2000. Saturated zone cuttings from the first five wells that have already been drilled were to be re-sampled to verify the absence of organic solvents. Six drill cutting samples were to be taken from six drums (representing ~10% of the drums). These samples were taken on November 20, 2000, from the following drums:

:

- 200W-00-0027(well C3112)
- 200W-00-0078 (well C3114)
- 200W-00-0110 (well C3115)
- 200W-00-0081 (well C3116)
- 200W-00-0047 (well C3119)
- 200W-00-0054 (well C3119).

For the remainder of the 15 wells, it was proposed that one sample be obtained from each groundwater monitoring well. The sample is to be obtained from the drum containing the drill cuttings from the first 15ft of the saturated zone. A sample will not be obtained from C3242 as it is located within 5 ft of the original well (the original well was abandoned due to construction problems). The drill rig was relocated approximately 5 ft away and another well was drilled. Due to the close proximity, the data from the first well will be used for this contained-in determination.

The sample data from the drill cuttings will be used to designate the other wastes (described previously in Section 2.0) associated with this contained-in determination. If the soil is determined to no longer contain listed organic solvents, then the associated miscellaneous solid

waste also will not contain listed organic constituents. The saturated zone soil should represent the worst-case scenario for the presence of contamination.

During the drilling of C3122, contaminants associated with the 216-T-19 Crib were encountered at approximately 35 ft. Drilling at this hole was suspended and the drill rig relocated approximately 30 ft away to start a new boring. The 216-T-19 Crib also received wastes associated with the single-shell tanks; therefore, the listed waste codes would also apply to wastes generated from the contaminated zone of this boring. The contaminated soils from this interval have also been sampled to determine the concentration of listed and characteristic constituents.

2.1 Sample Collection and Handling

A sampling and analysis instruction for RCRA drilling has been prepared to define the sampling and analysis activities to be performed to support drilling and construction of the RCRA groundwater monitoring wells. The samples are to be collected and handled in accordance with BHI-EE-01, *Environmental Investigations Procedures*, including the following procedures:

- Procedure 1.5, "Field Logbooks"
- Procedure 2.5, "Data Package Validation Process"
- Procedure 3.0, "Chain of Custody"
- Procedure 3.1, "Sample Packaging and Shipping"
- Procedure 4.0, "Soil and Sediment Sampling"
- Procedure 4.1, "Groundwater Sampling"
- Procedure 4.2, "Sampling Storage and Shipping Facility."

To verify the presence or absence of listed organic solvents, the samples will be analyzed in accordance with EPA's SW-846 Methods 8260 and 8270, respectively. The samples will also be analyzed for metals in accordance with EPA's SW-846 Method 6010 to provide information to verify that the soil does not designate as a characteristic hazardous waste. This will provide the information needed to obtain the contained-in determination. In addition, to provide sufficient information to ensure that waste is appropriately managed, the samples are analyzed for other constituents of concern (e.g., nitrate, sulfide, cyanide, pH, and radionuclides).

4.0 SAMPLING RESULTS

Saturated zone soil data from C3113, C3118, C3120, and C3121 are presented in Tables 1 and 2. The data indicate that no listed waste constituents (see Table 1) have been found above the MTCA Method B soil cleanup standard (WAC 173-340-740[3]) or 100 times the MCL (as appropriate). In addition, the soil would not designate as a characteristic dangerous waste pursuant to WAC 173-303 (see Table 2).

It is anticipated that saturated soils from resampling of the first five wells and subsequent well installations will also contain very low or nondetectable levels of listed and characteristic waste constituents.

5.0 REQUEST FOR CONTAINED-IN DETERMINATION

Based on the data presented previously in Section 4.0, RL requests that Ecology grant a contained-in determination for the saturated zone soils and debris (e.g., miscellaneous solid waste) associated waste generated from the drilling of C3113, C3118, C3120, and C3121 for the following listed waste codes:

- F001 – 1,1,1-trichloroethane, carbon tetrachloride
- F002 - methylene chloride
- F003 – acetone, methyl isobutyl ketone
- F004 – O-cresol, P-cresol, cresylic acid
- F005 – methyl ethyl ketone.

A contained-in determination is requested for the drums of saturated zone soil and associated debris that will be generated from drilling of the other calendar year 2000 RCRA groundwater monitoring wells for the 200 West tank farms if the following criteria are meet:

- Listed waste constituent concentrations are below MTCA Method B soil cleanup standards or 100 times the MCLs, as appropriate (see Table 1), and

- Constituent concentrations are below the dangerous waste characteristic levels (see Table 2).

It is requested that this same methodology by applied to the contaminated vadose zone soil and associated contact miscellaneous solid waste generated from the drilling of C3122.

6.0 REFERENCES

BHI-EE-01, *Environmental Investigations Procedures*, Bechtel Hanford, Inc. Richland, Washington

Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6901, et seq.

WAC 173-303, "Dangerous Waste Regulations," *Washington Administrative Code*, as amended.

WAC 173-340, "Model Toxics Control Act – Cleanup," *Washington Administrative Code*, as amended.

Table 1.

Contaminant	Health Based Limit in Soil (ppb)	Basis for Health-Based Limit	Sample Number	Value Reported (ppb)	Data Qualifier
Acetone	80,000	MTCA Method B – 100 times groundwater protection	C3113	11	JB
			C3118	12	U
			C3120	13	U
			C3121	12	B
m-Cresol and p-Cresol	80,000 8,000	MTCA Method B – 100 times groundwater protection	C3113	540	U
			C3118	340	U
			C3120	430	U
			C3121	520	U
o-Cresol	80,000	MTCA Method B – 100 times groundwater protection	C3113	540	U
			C3118	340	U
			C3120	430	U
			C3121	520	U
Carbon tetrachloride	33.7	MTCA Method B – 100 times groundwater protection	C3113	8	U
			C3118	6	U
			C3120	6	U
			C3121	5	U
Methyl ethyl ketone	480,000	MTCA Method B – 100 times groundwater protection	C3113	17	U
			C3118	12	U
			C3120	13	U
			C3121	10	U
Methylene chloride	500	100 times the MCL	C3113	30	B
			C3118	21	B
			C3120	20	B
			C3121	7	B
Methyl isobutyl ketone	64,000	MTCA Method B – 100 times groundwater protection	C3113	17	U
			C3118	12	U
			C3120	10	U
			C3121	10	U
1,1,1-trichloroethane	20,000	100 times the MCL	C3113	8	U
			C3118	6	U
			C3120	6	U
			C3121	5	U

Table 2.

Contaminant	Waste ID No.	Designation Level (ppm)[a]	Sample Number	Maximum Reported Value (ppm)	Data Qualifier
Arsenic	D004	100	C3113	1.2	
			C3118	0.96	
			C3120	1.2	
			C3121	11.2	
Barium	D005	2000	C3113	41.1	
			C3118	44	
			C3120	60	
			C3121	109	
Cadmium	D006	20	C3113	0.04	U
			C3118	0.03	U
			C3120	0.07	
			C3121	0.04	U
Chromium	D007	100	C3113	17.5	
			C3118	3.1	
			C3120	34.1	
			C3121	9.2	
Lead	D008	100	C3113	3.4	
			C3118	4	
			C3120	6.0	
			C3121	10.7	
Mercury	D009	4	C3113	0.02	U
			C3118	0.02	U
			C3120	0.02	U
			C3121	0.02	U
Selenium	D010	20	C3113	0.4	U
			C3118	0.38	U
			C3120	0.40	U
			C3121	0.52	U
Silver	D011	100	C3113	0.13	U
			C3118	0.1	U
			C3120	0.20	U
			C3121	0.13	U

[a] The toxicity characteristic leaching procedure value multiplied by 20 will represent the maximum total metal value possible for comparison with the total maximum reported level

APPENDIX
RCRA DRILLING WASTES

BACKGROUND

- Several RCRA wells are being installed around the S and T Tanks farms to monitor groundwater.

- The groundwater in these areas has been identified as containing listed waste codes F001 through F005.

- Obtaining a contained-in determination could result in cost savings to the program.

STATUS

- Drums containing waste (primarily drill cuttings) from drilling of the RCRA wells are located on the 90-day pad awaiting final disposition.

- Samples of the drill cuttings have been taken and analyzed for waste designation purposes.

- Data have been received from the laboratory for the 1st five wells. Most of the VOAs and semi-VOAs are below detection limits with the following exceptions.

    - Di-n-butylphthalate was reported at 83 ppb and flagged as estimated and containing blank (B) contamination in well C3115.
    - Chloromethane was reported at 1 ppb and flagged as estimated (J).
    - Chloroform as reported at 1 ppb and was flagged as estimated (J).
    - Bis-(2-ethylhexyl) phthalate was reported at 21 ppb and flagged as estimated (J) in well C3114. This is a common lab contam.
    - Methlyene chloride and acetone were reported at 17 and 24 ppb respectively and flagged as blank (B) contamination in C3115
    - Methylene chloride and acetone were reported at 8 and 23 ppb respectively and flagged as blank (B) contamination in C3116.
    - Methylene chloride and acetone were reported at 17 and 24 ppb respectively and flagged as blank (B) contamination in C3114.
    - Methlyene chloride and acetone were reported at 11 and 7 ppb respectively and flagged as blank (B) contamination in C3112. The acetone was also flagged as estimated.
    - Methlyene chloride and acetone were reported at 15 and 10 ppb respectively and flagged as blank (B) contamination in C3119. The acetone was also flagged as estimated.

- With one exception (chromium in one drum from C3114) all total metal concentrations when applying the 20X rule are below characteristic designation limits. The one sample with high total chromium values will be re-analyzed using the TCLP method.

- The designation has been completed for drums associated with the first three wells. These samples designate as hazardous waste only due to listed constituents that may be associated with the groundwater (F001-F005). Radionuclides are below release values. Waste is identified to be sent offsite to a permitted TSD.

- To verify the absence of organics in the drums, the head space of various drums were analyzed for organics at the onsite mobile laboratory located at the 200-ZP-1 Operable Unit.

- Organics were detected in most of the head space samples.

PROPOSED ACTION

- It is proposed that additional soil samples from the drums at the 90-day pad from the 1st five wells that were drilled be taken to verify soil sampling results and to provide information for a contained in:

  - 6 samples of drill cuttings will be taken from 6 drums (represents 10% of the drums as there are 59 drums from the 1st 5 wells)

    - Five samples will be taken from the drums with the highest head space concentrations
      - Drum 200W-00-0078 (C3114), 200W-00-0110 (C3115), 200W-00-0081 (C3116), 200W-00-0047 (C3119), 200W-00-0054 (C319).

    - 1 sample will be taken from drum 200W-00-0027 (C3112)

- The samples will be analyzed for VOAs and Semi-VOAs.

- It is proposed that a contained in determination be granted if the organic constituents are less then the levels identified below. The sample data from the drill cuttings will be used to designate the miscellaneous solid waste/other associated waste.

CONSTITUENT	HEALTH-BASED LIMIT AND SOURCE
Acetone	80,000 ppb (MTCA B)
Cresols	8,000 ppb (MTCA B for p-cresol)
Cresols	80,000 ppb (MTCA B for o-cresol)
Cresols	80,000 ppb (MTCA B for m-cresol)
Carbon tetrachloride	33.7 ppb (MTCA B Soil
Methy ethyl ketone	480,000 ppb (MTCA B Soil)
Methlyene chloride	500 ppb (100X MCL)
Methyl isobutyl ketone	64,000 ppb (MTCA B Soil)
1,1,1-trichloroethane	20,000 ppb (100X MCL)

- For the rest of the RCRA wells RL proposes that 1 sample be obtained from 1 drum of drill cuttings (which is approximately 10%). (One well will not be sampled as it is located within 5 feet of the original well)

- The sample will be obtained from between 0 to 15 feet into the saturated zone.

- The samples will be analyzed for the following:
  - Nitrate by 9056
  - Metals by 6010
  - VOCs by 8260
  - SVOCs by 8270
  - Sulfide and cyanide by SW-846, Section 7.3.4.2 and 7.3.3.2
  - pH by 9045C
  - Radionuclides: gross beta, gross alpha, Cs-173, Co-60, Eu-154, I-129, Ra-226, Ra-228, Sr-90, Tc-99, Th-228, Th-232, Pu-238, Pu-239/240, H-3, Total Uranium, U-235, U-238

CONCLUSION

- Data indicates that a contain-in could be granted for the RCRA drilling waste.

- Additional sampling is proposed of the 1st five drums to verify initial data

- In order to complete the sampling and obtain concurrence on a contained in, an extension to the 90-day requirement is required and has been requested. An extension beyond 30 days is likely to be required or an agreement could be reached to label the drums as waste pending analysis. The clock would then not start until the data had been received and it had been determined that listed waste was present above health based levels.